

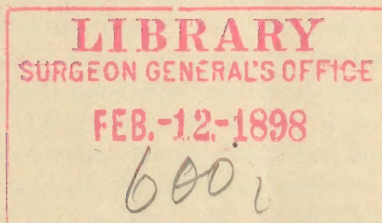
SOMERS (L.S.)

COMPLIMENTS OF  
DR. LEWIS S. SOMERS,  
3554 North Broad St.

# ATROPINE RHINITIS.

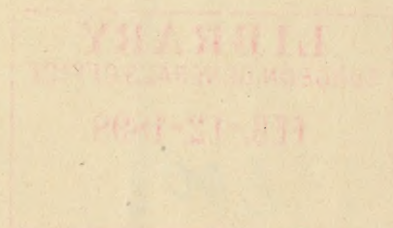
—BY—

LEWIS S. SOMERS, M.D., PHILADELPHIA, PA.



ATROPINE RHINITIS

LEWIS J. KONTZ, M.D., THUNDERBOLT, PA.





## ATROPINE RHINITIS.

BY LEWIS S. SOMERS, M.D., PHILADELPHIA, PA.

The term atropine rhinitis is here used to designate a form of irritation of the Schneiderian mucous membrane and turbinal cavernous tissues, from the effects of atropine instilled into the eye and passing through the lachrymal canal, exerting its local influence on the tissues of the nasal cavities. When atropine is applied in minute amounts to the nasal tissues, there is produced dryness of the mucous membranes; as the amount of the drug is increased, we find, in addition to the dryness, signs of beginning irritation, the turbinal cavernous tissues becoming more red in color than normally and at the same time there is a total lack of secretion, presenting a dry, glazed appearance very similar to that seen in the first stage of an acute coryza. As the amount of atropine is still further increased, we have, in addition to the two symptoms already mentioned, a feeling of heat and discomfort in the nasal chambers, and if examination be now made, it will be found that the turbinals are congested and the secretions increased. The reflex action of the parts are lessened or entirely abolished, with loss of the vessel tonus.

When applied locally, atropine is an irritant and in small amounts stimulates the vaso-motor centers. In large amounts, when applied directly to the tissues, the peripheral nerve filaments are paralyzed, due to a direct local action of the drug. The effects as studied by numerous observers on muscle tissue are peculiar, inasmuch as the drug first stimulates and finally paralyzes involuntary muscles, while no effect, even when used in large amounts, is seen with striped or voluntary muscles. As the venous sinuses, composing in great part the turbinal tissues, are surrounded by unstriped muscular fibers, we can readily see, from what has just been said, the effects of atropine on this portion of the nasal tissues.

In ophthalmological practice the strength of the atropine solution, generally used to produce mydriasis, is four grains to the ounce of water and but one minum is used in each eye, at the same time pressure is made with the finger over the lachrymal duct so that the solution will remain and be absorbed. It is sometimes necessary to use a number of drops of the solution in both eyes for several days, until the proper amount of mydriasis is produced. Occasionally the

patient is given the solution, with directions as to the amount to be instilled into the eyes until the desired effect is obtained. Frequently no directions are given as to compressing the lachrymal duct and the larger amount of the solution escapes into the nasal cavity; the number of instillations being increased to dilate the pupil, so as to compensate for the amount lost *via* the nasal duct. In the majority of cases there are no ill results from the atropine remaining in the nasal chambers, but in a smaller proportion, either from an excessive amount of the drug being used, or from a peculiar idiosyncrasy of the patient, atropine rhinitis results.

The following case will illustrate the condition: M. P., age eleven years, female, white. Was first seen on March 30, 1897, complaining of a constant watery nasal discharge. Her mother stated that on March 6 she went to the eye clinic of a large general hospital on account of some impairment of vision. A number of drops were instilled into both eyes, which were afterwards ascertained to be atropine of the usual strength used for refractive work. No untoward symptoms were noticed until the evening of the same day when emesis occurred, without nausea, and has continued until the present time. On the following day she complained of a post-nasal discharge of a watery fluid, which was accompanied by a free anterior discharge; this was then like water and in it were masses of thick mucous. Previous to the use of the drops there had been no subjective or objective signs of nasal trouble.

On examination of the nasal cavities both sides were seen to be affected; the turbinals, and especially the inferior, were pale in color, with that sodden appearance as observed a few days after the onset of hay fever, and they were soft and "boggy" to the touch of the probe, giving one the feeling as if the tissues were relaxed. From the surface of the mucous membrane a clear serum was transuding in considerable amounts, the nasal cavities filling immediately after the removal of the previous discharges. The mucous membrane was macerated from the excessive irritation, which had nearly passed away before I saw the case; this had extended to the muco-cutaneous junction of the vestibule, the upper lip being red and irritated from the acrid secretions. The treatment consisted in cleansing the nasal chambers with a mild antiseptic, alkaline solution followed by mentholated albolene, two grains to the ounce, the irritated areas being then covered with an ointment composed of two grains of the yellow oxide of mercury to the ounce of lanoline. Recovery ensued in a few days, no other after effects of the atropine being observed, and the nasal tissues rapidly regaining their normal condition.



This case was undoubtedly due to an idiosyncrasy to atropine, being analogous to the effects seen in a minority of cases when the drug produces the peculiar so-called "atropine conjunctivitis" in unduly susceptible individuals. In these cases a minute amount will produce irritation of the conjunctiva, with swelling and erythema of the skin of the eyelids and surrounding region. (Juler.) It then being necessary to discontinue the use of the drug, when the irritation promptly ceases. In persons possessed of this peculiarity of the nasal tissues, the use of atropine as a mydriatic must be stopped and the nasal irritation promptly disappears under the use of soothing local applications.

There is another condition that I have met with as the result of the excessive use of atropine instillations, occurring in children, not from any undue susceptibility to atropine, but from its continued use in the eye. In some ocular affections when a continuous mydriasis was desired and the patient allowed to use one or two drops of the one per cent. solution in each eye, three times daily for one or two weeks, we will find the condition presently to be described. In the majority of cases from the use of the drug in both eyes the nasal affection is bilateral, but in a much smaller number the solution has been used in but one eye and then the nasal changes are unilateral, occurring only in the nasal chamber corresponding to the atropinized eye. In the cases where both nasal chambers have been saturated with the atropine solution for several days, we find the turbinals enlarged from passive congestion; on the surface they are gray in color, from the sodden and macerated epithelium which comes off in flakes; underneath the epithelial layer the cavernous tissue is a deep red, from the large amount of blood in the sinuses, their walls being relaxed and active transudation of serum taking place constantly; this with obstruction to nasal breathing being the two main symptoms complained of by the patient.

The septal mucous membrane also partakes of the same characteristics as seen in the turbinal tissue and the cavernous tissue of the septum is more or less prominent from the desquamated epithelium. The olfactory portions of the nose are unaffected as a usual rule, but a moderate amount of anosmia is sometimes observed. When the irritation is unilateral we find the same changes as just noted, the other nasal chamber remaining normal. This sub-acute form is a continuation and later stage of the acute affection as seen in the case previously described. As this form is seen by the rhinologist later in its course than the acute cases, it is impossible to accurately describe the first effects of the atropine on the nasal mucosa. I have

seen a number of cases affected in this way and they all present the same characteristics, resembling to a great extent the changes and symptoms, except excessive sneezing, as observed in hay fever.

The nasal septum is never ulcerated to any depth, nor is perforation seen, but superficial areas of epithelial necrosis are constant, especially along the inferior edge and anterior cartilaginous plate. All the cases were in girls, from five to fourteen years of age, not any being observed in the male sex, and I have never found the condition in adults. The general health of the patients seemingly bearing no relation to the susceptibility to the drug, as all the children were in fair physical condition. No marked chronic changes in the nose or naso-pharynx were observed, the irritation apparently not being due to any previously existing catarrh.

With certain drugs, when taken internally, we frequently have rhinitis resulting, either from an excessive dose or from the susceptibility of the patient; as an example of this class we may take iodide of potash, in some cases a minute dose producing violent inflammation of the mucous membranes. I recall the case of a young woman, seen several years ago, in which one grain of iodide of potash produced an intense form of coryza.

Rhinitis, due to atropine, resembles to some extent those cases of hay fever caused directly by some definite object, such as certain fruits or animals, or various medicinal agents, as ipecac, sulphur and lycopodium. The condition of the nasal mucosa is very similar in these cases, inclining me much to the opinion that a close relationship exists between the two affections. Morrell Mackenzie, although not mentioning this condition in his work on the nose and throat, describes a somewhat analogous condition under the head of traumatic rhinitis, due to minute particles of irritating substances suspended in the atmosphere and directly irritating the nasal tissues. These irritants may be in the form of vapor, as ammonia or chlorine gas, or solid particles, as the dust from various metals, etc. In traumatic rhinitis, the mere irritation is not in *toto*, sufficient in all cases to produce the irritation of the nasal mucosa, as we frequently find that of two persons subjected to the same amount of irritation, one will show no effects, while the other will have a violent coryza in a few hours, or even immediately after exposure to the exciting cause. This, of course, is what occurs in "atropine rhinitis," the minority of individuals only being affected when the drug is used for ophthalmoscopic purposes.

The eye containing the atropine is affected but slightly, typical atropine conjunctivitis not occurring when the nasal tissues are



affected and in the larger class of cases the drug having no deleterious effects upon the organ of vision, while in one or two cases seen, a mild grade of conjunctivitis existed coincident with the instillation of the mydriatic, not severe enough to require special treatment and disappearing as the nasal irritation cleared away.

3554 North Broad Street.

